The Top Ten Things You Need to Know About Flash Today

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#8-10

10: Flash has almost completely displaced chemical film

"But it's too expensive"

9: Flash has almost completely displaced magnetic storage media for music, audio, video

"But it's too expensive"

8: One size does not fit all any longer

- <1Mb densities through 128Gb
- Same density on same node for different markets
- NOR, NAND, emerging NVM
- SLC, MLC, TLC

#5-7

7: MLC NAND is good enough for all but the most write-intensive enterprise applications today

6: TLC NAND is not recommended for active data in the enterprise

5: Flash gets harder to manage as we scale the lithography, so we have to get better at managing it

4: "1Xnm" ≠ 1Xnm

"10nm class" ≠ 10nm (not even 16nm)

3: 3D NAND will enable lower costs and continued scaling, but the 2014 implementations will not be lower cost than 2D 1Xnm is today

2: 3D NAND will set the lithography clock back

Better margin for today's failure mechanisms, but new ones will emerge

#1

Flash doesn't have to be lower cost than rotating media to displace it for many users

- In client applications, it just had to provide enough capacity at a reasonable cost
- In enterprise applications, TCO, $ per IOP, $ per Watt, etc, are more important metrics

"But it's too expensive" =

Perhaps you can find an HDD Summit!